

We claim:

1 1. An apparatus for extracting cells from organs, comprising:
2 a digestion chamber for containing said organ and a physiologically compatible
3 medium with at least one protease, said digestion chamber having at least one inlet and at least
4 one outlet, and a separator for retaining said organ and permitting said cells and said
5 physiologically compatible medium to exit said outlet;

6 at least one agitation member in said digestion chamber, said agitation member
7 having an interior with at least one void.

1 2. The apparatus of claim 1, wherein said agitation member comprises a non-
2 corrosive metal.

1 3. The apparatus of claim 1, wherein said agitation members are comprised of a
2 substantially smooth, continuous exterior surface.

1 4. The apparatus of claim 1, wherein said agitation members are substantially
2 spherical.

1 5. The apparatus of claim 4, wherein said agitation member has an interior with one
2 centrally located substantially spherical void.

1 6. The apparatus of claim 1, wherein said agitation members have a density of about
2 3.0 - 4.0 g/cm³.

1 7. The apparatus of claim 1, wherein said agitation members have a density of about
2 3.5 g/cm³.

1 8. An agitation member for a digestion chamber of an apparatus for extracting cells
2 from organs, said agitation members having an interior with at least one void.

1 9. The agitation members of claim 8, wherein said agitation member comprises
2 a non-corrosive metal.

1 10. The agitation member of claim 8, wherein said agitation member has a
2 substantially smooth, continuous exterior surface.

1 11. The agitation member of claim 8, wherein said agitation member is
2 substantially spherical.

1 12. The agitation member of claim 11, wherein said agitation member has an interior
2 with one centrally located substantially spherical void.

1 13. The agitation member of claim 8, wherein said agitation member has a density
2 of about 3.0 - 4.0 g/cm³.

1 14. The agitation member of claim 8, wherein said agitation member has a density of
2 about 3.5 g/cm³.

1 15. A method for extracting cells from an organ, comprising the steps of:
2 providing a physiologically compatible medium with at least one protease;
3 providing a digestion chamber, said chamber having at least one inlet and at least
4 one outlet, and a separator for retaining said organ and permitting said cells and said
5 physiologically compatible medium to exit said outlet;
6 providing at least one agitation member in said digestion chamber, said agitation
7 members having an interior with at least one void;
8 flowing said physiologically compatible medium through said digestion chamber;
9 moving said agitation member within said digestion chamber, whereby said
10 agitation members will agitate said organ to facilitate release of said cells; and
11 collecting said cells.

1 16. The method of claim 15, wherein the step of moving said agitation member
2 further comprises a step of moving said digestion chamber so as to move said agitation member
3 within said digestion chamber.

1 17. The method of claim 15, wherein said agitation member comprises of non-
2 corrosive metal.

1 18. The method of claim 15, wherein said agitation member comprises a
2 substantially smooth, continuous exterior surface.

1 19. The method of claim 15, wherein said agitation member is substantially
2 spherical.

1 20. The method of claim 19, wherein said agitation member has an interior with one
2 centrally located substantially spherical void.

1 21. The method of claim 15, wherein said agitation members has a density of about
2 3.0 - 4.0 g/cm³.

1 22. The method of claim 15, wherein said agitation member has a density of about
2 3.5 g/cm³.

1 23. The method of claim 15, wherein said protease is collagenase.

1 24. The method of claim 15, wherein said organ is a pancreas and said cells are
2 Islets of Langerhans.

1 25. The method of claim 15, wherein said physiologically compatible medium is
2 heated prior to entering said digestion chamber.

1 26. The method of claim 15, wherein said physiologically compatible medium is
2 heated to a temperature selected to maximize the effectiveness of the protease.

1 27. The method of claim 15, wherein said heating heats said physiologically
2 compatible medium to a temperature between 24° C - 40° C.

1 28. The method of claim 15, wherein said heating heats said physiologically
2 compatible medium to a temperature of about 37° C.

1 29. The method of claim 15, wherein said physiologically compatible medium is
2 cooled following exit from said outlet of said digestion chamber.

1 30. The method of claim 15, wherein said cooling cools said physiologically
2 compatible medium to a temperature between 4° C - 20° C.

1 31. The method of claim 15, wherein prior to said step of collecting said cells,
2 further comprising a step of detecting said cells in said physiologically compatible medium.

1 32. The method of claim 15, further comprising a step of removing said
2 physiologically compatible medium containing said cells, and adding additional physiological
3 compatible medium without heating prior to entering said digestion chamber.